

XXV. *An Essay on the various Species of Sawfish.* By Mr. John Latham, F. R. and A. S. S. and F. L. S.

Read Jan. 8, 1793.

THE purport of the following paper is to endeavour to identify, as different species, the various kinds of Sawfish, which have hitherto caused much confusion, from being esteemed as mere varieties, or sexual differences of one and the same species, with the view of promoting a further investigation of the subject, which it is hoped this crude Essay may pave the way to. The matter is more particularly interesting, as very little has been added of late years, or indeed from the time of *Belon*; who, if I mistake not, was the first who gave a figure of any part of the animal*.

In regard to place in the system, most authors have fixed the *Sawfish* in the *Squalus* or *Shark* genus, with which it must be confessed it greatly coincides, excepting the elongation of the head into a *beak* or *snout*, which part in some measures one-fourth, in others more than one-third of the whole length of the fish: however, it cannot be denied, that it also resembles the genus of *Raia* or *Ray* in many particulars, which *Klein* gives for a reason when he wishes it to be placed between the two; though he hesitates to make it a distinct one. In respect to myself, I cannot but own,

* *Aquat.* 1553. 8vo. p. 66. a figure of the snout.

that were only a single species known to me, as was supposed by the ancients, I should most certainly join in the received opinion of placing it with the *Sharks*, though differing in some particulars, rather than to form a new genus for it.

It has been urged, that the difference of shape and size of the spines in the snouts of various subjects may arise from age or sex: the latter I cannot deny, as far as relates to the two first described, as the spines resemble each other more than those which follow; yet in regard to the first two, whoever will make a fair comparison will most probably join with me in separating them, till we have sufficient authority to unite them into one species.

The number of spines also, were no other distinction manifest, will of itself be sufficient to form a precise character for dividing the several species.

Klein observes, that in the embryo state the sides of the snout are as smooth as the gums of a new-born infant; but, in this case, we are inclined to think that the spines make their appearance not long after its exclusion, and that they grow very quickly; for in a specimen of the second species, now before me, the total length of which I conjecture to have been about thirty inches, the spines are full one-fourth as long as those of a nearly full grown specimen in the *Leverian Museum*. Another observation may likewise be drawn from the comparison of the snouts of the smaller sized with the full grown ones; for as some have been met with which measured only eight inches, and contained from thirty to thirty-four spines on each side; and others, of the very same species, of three feet in length, in which were found no greater number; may we not safely conclude, that they do not increase by being shed in the first stages of life, to be replaced by others, as in the jaws of the human species, and those of quadrupeds?

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The *rostrum* or *snout* in every species which I have yet seen has been straight, or at most curved upwards in a very trifling degree, and the representations of it, in authors who have figured it, lead us to think the same; one instance only excepted, wherein a foetus of one with twenty-six spines in the rostrum is engraved, with that part bent in the form of a bow*: this surely must be a singular *lusus naturæ*; unless we can suppose it to have been bent while fresh, and so dried, in order to enhance the value of the specimen by exciting the wonder of the naturalist.

The *Sawfish* is said to be found both in the *northern* and *southern* parts of the world, and some have been met with of our first and second described of fourteen or fifteen feet in length, the snout measuring one-third of the total length. The ancients had but a very imperfect knowledge of the subject, when *Pliny* asserts, that *Pristes* are met with in the *Indian Sea* of two hundred cubits in length†, and in another place he calls it the mighty fish called *Pristis*‡. The same notion also had *Aldrovandus*, when he figured an ideal one of a cetaceous magnitude, with a crest on the front, spouting the water from tubes on the top of the head, in the manner of some of the *whale* genus. The same may also be seen in *Gesner*, *Piso*, *Marcgrave*, and others, who have copied from one another. On a level with these stands *Olaus*, who takes for granted, that the *Sawfish* is able to divide a ship in two with the *snout* §.

However, to say no more of such idle tales, it is certainly in the power of fishes of this kind to be injurious to the more defenceless.

* *Bloch. Fisch. Deutschl.* t. 120.

† *Plin. Nat. Hist.* lib. 9. cap. 3.

‡ *Id.* lib. 36. cap. 5.

§ "It will swim under the ships, and cut them, that the water may come in, and he may feed upon the men when the ship is drowned." *Olaus Magnus, Hist. Goth.* book 21. ch. 10.

*Fresier** saw a battle between several *Sawfishes* and a *Whale*, when all of them attacking the *Whale* at once, soon became victorious.

It is too plain, by the very little I have been able to collect of the natural history of the subject of this paper, that the ancients had paid but little attention to it: to elucidate the matter is reserved for the more enlightened naturalists of the present day; and it is to be hoped, that no opportunity of examination may henceforth be neglected by those who may be fortunate in having specimens, more especially recent ones, pass under their observation.

Those who may wish to retain the whole of the following under the genus of *Squalus*, will have no difficulty in adjusting them according to their wishes: on the other hand, such as agree with me in separating them therefrom, will see beneath an attempt to form a *new one* under the name of

P R I S T I S.

Caput rostro elongato plano, utrinque spinoso.

Spiracula 4—5 ad latera colli.

Corpus oblongum, teretiufculum, cute aspera coriacea.

Os sub capite.

Nares ante *os*, lobo membranaceo semitectæ.

Pone *oculos* foramina ovalia duo.

Pinnæ ventrales approximatae, & in mare circa genitalia posita.

Pinnæ anales nullæ.

* *Voy. de la Mer. du Sud.*

I. ANTIQUORUM.

Pr. rostro spinis validis utrinque 18—24. Tab. 26. f. 1.

Squalus Pristis, *Lin. Syst. Nat.* 1. p. 401. 15. *Faun. Suec.* 297.

Mus. Ad Fr. 1. p. 52. *Mull. Lin. Th.* 3. tab. 11. f. 2. (spin. 18.)

Gmel. Lin. 1. p. 1494. 15. *Fab. Fn. Groenl.* p. 130. 91. *Mull.*

Prodr. p. 38. 319. *Klein. Miss. Pisc.* 3. p. 12. No. 11. tab. 3.

f. 1, 2. (Pullus.)

Plin. Nat. Hist. lib. 9. cap. 2. *Clus. Ex. tab.* 14. p. 136 (spin. 20.)

Aldrov. Cet. p. 692. *Will. Ichth.* p. 61. tab. B. 9. fig. 5. (fig.

Clusii.) *Raii Syn. Pisc.* p. 23. *Olear. Mus.* p. 41. t. 26. f. 1.

Rondel. Pisc. 487.

Bell. de Aq. t. in p. 66. (Langue de Serpent.)

Valent. Amboin. p. 33. t. 19. f. 52. *Bloch Fisch. Deutsch.* p. 37.

t. 120. *Du Tertre Ant.* p. 207. (Spadon.) *Bonann. Mus. Kirch.*

t. 288. t. 21.—*Cabinet de Ste. Genev. t. p.* 100. *Brouss. Act. Par.*

1780. p. 671. (La Scie.) *Pis. Ind. Occ.* p. 51. *Marcgr. Bras.*

p. 158. (Araguagua). *Gronov. Zooph.* p. 33. *Arted. Syn.* 66. Id.

Syn. 93. *Brown. Jam.* 458. 1.

Habitat in oceano.

Totum corpus ad 15 pedes longum, supra nigricans, seu leucophæo-griseum, abdomine albicante.—Caput antice planum.—Rostrum ad 5 pedes longum, spinis validis numero utrinque 18—24.—Os dentibus granulatis instructum.—Oculi magni iride aurea.—Pone oculos foramina duo oblonga.—Spiracula quinque.—Pinna dorsalis prima ventralibus opposita, altera inter primam & caudæ apicem media—Pectorales latæ longæque—Caudalis brevior quam congeneribus.

This species and the following grow to the largest size of any which.

which have yet come under the inspection of the Naturalist, some specimens measuring fifteen feet in length.

The head is rather flat at top, the eyes large, with yellow irides; behind each is a hole, which some have supposed may lead to an organ of hearing*. The mouth is well furnished with teeth, but they are blunt, serving rather to bruise its prey than to divide it by cutting. Before the mouth are two other foramina, supposed to be the nostrils. The *rostrum*, *beak*, or *snout*, is in general about one-third of the total length of the fish, and contains in some eighteen, in others as far as twenty-three or twenty-four *spines* on each side; these are very stout, much thicker at the back part, and channelled, inclining to an edge forwards. The *fins* are seven in number—viz. two *dorsal*, placed at some distance from each other—two *pectoral*, taking rise just behind the breathing-holes, which are five in number—two *ventral*, situated almost underneath the first *dorsal*—and lastly the *caudal*, occupying the tail both above and beneath, but longest on the upper part. The general colour of the *body* is a dull grey, or brownish, growing paler as it approaches the belly, where it is nearly white.

2. PECTINATUS.

Pr. rostro spinis angustioribus utrinque ad 34. Tab. 26. fig. 2.

Pristis seu Serra, *Gesner Aq. fig. in p. 728.* (spin. 34.) *Id. Ic. An. p. 171.*—*Mus. Besler. tab. 17. f. 3.* (spin. 28.)—*Id. f. 1.* (caput, spinis 25.) *Aldr. Cet. f. p. 692.*—*Johnst. Pisc. p. 8. t. III.*—(spin. 28.)—*Blas. Anat. p. 466. t. 49. f. 13.*—*Bloch Deutsch. p. 37. t. 120.* (rostr. arcuat.) *Knorr. Delic. p. 56. t. H. 4.*—*Olear. Kunst. p. 38. t. 25. f. 1.*—*Pontop. Hist. Norv. II. p. 240.* (spin. 25.)

Habitat in oceano.

* Nos foramina hæc *meatus auditorios* esse credimus. *Willughb.*

Corpus a priore non multum differt.—*Rostri* spinæ longiores, & minus validæ, numero variant a 25 usque ad 34.—*Pinnæ* posticæ magis excavatæ.

This and the former species have been confounded hitherto by Naturalists, nor are we certain that any others have been observed by them: and if we may judge by their figures of each, it should seem that the first described was the most plentiful. That figured in *Gesner* is far from a bad representation, and the one engraved by *Knorr* in his *Deliciæ* is sufficiently accurate. This species differs from the first, in having the *snout* more narrow in proportion at the base, and the whole of it more slender in all its parts; whereas the first is very broad at the base, and tapers considerably from thence to the point. The spines on each side also are longer and more slender, and vary from twenty-five to thirty-four in the different specimens: we have indeed been informed of one which contained no less than thirty-six spines on each side of the snout; but we must confess that we have never been fortunate enough to have seen such a specimen. This is supposed to grow to as great a size as the former, and in the general make and shape of the body does not materially differ.

3. CUSPIDATUS.

Pr. rostro spinis cuspidatis latis utrinque 28. Tab. 26. fig. 3.

Habitat — — — —

Rostrum huic per totam longitudinem latitudinis fere æqualis.—*Spinæ* abbreviatæ, latæ, planæ, ad apicem cuspidatæ.

Of this species I have only seen two specimens of the *rostrum*, one in my own collection, the other in that of Mr. *Parkinson*—the first

first is about a foot and a half in length, the other more than two feet and a half: in both of these are twenty-eight spines on each side; but the distinguishing feature is in the spines themselves being particularly flat and broad, and shaped at the point more like the *lancet* used by surgeons in bleeding, than any other figure. We believe that no author has hitherto taken notice of this species.

4. MICRODON.

Pr. rostro spinis minutis vix rostrum exerentibus. Tab. 26.
fig. 4.

Habitat — — — —

Corpus ut in congeneribus, 28 pollices longum.

Rostrum planum, a basi ad apicem modice attenuatum.—*Spinæ* utrinque 18, minus conspicuæ.

A complete specimen of this fish is in the museum of Mr. *Parkinson*, which is probably unique; the total length is twenty-eight inches, the *snout* occupying ten; from the base of this to that of the *pectoral* fins four inches; between the *pectoral* and *ventral* fins six. The two *dorsal* fins occupy nearly the same proportions in respect to each other; but the hinder one is the smallest, and all of them are greatly hollowed out at the back part, much more so than in the two first species.

The *snout* differs from that of every other, in several particulars: it is longer in proportion, being more than one-third of the whole fish. The *spines* do not stand out from the sides more than a quarter of an inch, and from this circumstance seem far less capable of doing injury than any other species yet known.

5. CIRRATUS.

5. CIRRATUS.

Pr. rostro cirrato spinis longioribus : brevioribusque intermediis.

Tab. 26. fig. 5. and Tab. 27.

Habitat in *Nova Hollandia*.

In hac specie *rostrum* spinis circiter 20 acutis, modicè incurvis, munitum; brevioribus a 3—6 interjectis—ad latera subtus utrinque cirrus elongatus flexilis.

Of this curious and singular fish we have only met with one specimen, which was brought from *Port Jackson* in *New Holland*, and is in the possession of *Thomas Wilson, Esq.* of *Gower-street*, who obligingly lent it to me, for the purpose of describing and figuring it.

It is a *male*, and the total length about forty inches: the *snout*, from the tip of it to the eye, eleven: the *spines* widely different from any of the others; they are indeed placed, as usual, on the edge, but are continued on each side even beyond the eyes, as may be seen in the drawing. The longer ones are slender, sharp, somewhat bent, and about twenty in number; and between these are others not half the length of the primal ones, between some three or four, between others as far as six; and in general the middle one of these smaller series is the longest: besides these, a series of minute ones may be perceived beneath, at the very edge. In the *snout* likewise another singularity occurs:—about the middle of it, on each side, near the edge, arises a flexible, ligamentous cord, about three inches and a half in length, appearing not unlike the beards at the mouth of some of the *Gadus* or *Cod* genus, and no doubt as pliant in the recent state. The colour of the fish is a pale brown:

the *breathing apertures* four in number: the *mouth* furnished with five rows of minute, but very sharp *teeth*: as to the rest, as we have thought right to give a representation of the whole fish (Tab. 27.) a comparative view of the parts may be judged of without further description.

I do not doubt of the above specimen being a young one, as the snout seems to have shrunk much in drying:—but, to determine this matter, it is to be hoped that future voyagers, who may chance to visit that part of the world from whence this was received, will pay strict attention to the natural history of so curious a production of nature.